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IMPACTS OF 6QS-CTTRFM MODAL ON INCREASING TB BACTERIOLOGICAL CONFIRMATION IN TANZANIA: A CASE FROM RUVUMA REGION

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Abstract:

Introduction: Low TB bacteriological Confirmation remains the bane to TB eradication in Tanzania including Ruvuma region. To tackle the challenge, Ruvuma region through the RHMT and Implementing Partners (MDH and Deloitte) introduced the use of the 6Qs-CTTRFM Modal to emphasize the use of the molecular diagnostic techniques (GeneXpert and TrueNat) to control the quality of the. for TB diagnosis cascade for the increase of the bacteriological confirmed TB cases in the region.

Methods: The implementation of the modal started with the provision of training of the DOT nurse and CHWs on quality sample collection and storage, training of riders (Boda-boda) for quality sample transportation, training of laboratory staff for quality sample testing that TB diagnostic centers and conducting training of RHMTs, CHMTs, and Health managements on monitoring and evaluation of the trends of the bacteriological confirmation in their area

Results: The trends of notification of TB cases and the bacteriological confirmed TB cases increased from 2065 in 2020 to 2394 in 2023. The increase in the sample collected caused the increase of the bacteriological confirmed cases from 491 in 2020 to 985 in 2023.

Conclusion: The 6Qs-CTTRFM model plays a key role in increasing of the bacteriological confirmed cases in Ruvuma. The engagement of the IPs, RHMT, and CHMTs is important for maintaining the implementation of the modal.

Key words: 6Qs-CTTRFM modal, GeneXpert, TrueNat, RHMT, CHMT

1.0.INTRODUCTION

Tuberculosis (TB) is a leading cause of morbidity and mortality worldwide, affecting about 10 million people every year, and Africa is home to almost one-quarter of global TB cases. [1,2] Tanzania is among the 30 high-burdened countries with TB notification cases 99,950 in 2022 [3] Low TB bacteriological Confirmation remains the bane to TB eradication in Tanzania. The report of 2022 shows among the TB notified cases only 33 % [3] were bacteriologically confirmed.

Ruvuma is among the regions with reported cases of TB with low bacteriological confirmation since 2015. The use of Microscopy and X-ray was dominant among the diagnostic centers resulting in to increase in low bacteriological confirmation [4]. From 2020 Ruvuma region introduced and sensitized the use of molecular techniques for TB diagnosis. The region introduces 9 GeneXpert and 2 True Nat molecular diagnostic machines at eleven TB diagnostic centers with regional, district, and health centers. The

selected TB diagnostic centers act as the hub for testing facilities for TB patient smears and other TB samples referred and transported from other health facilities without either GeneXpert or TrueNat. Despite the distribution of these molecular diagnostics machines (GeneXpert and TrueNat) for TB diagnosis the region continued reporting low bacteriological confirmation due to the continuation of the use of the X-ray for clinical diagnosis of TB cases instead of the use of the GeneXpert and True Nat as recommended.

2.0. NEED OF THE STUDY.

Low Bacteriological confirmed TB is the major challenge in Tanzania. Despite of introduction of the Molecular technics tools (Gene experts and TrueNat) to be used as the god standard for TB diagnosis instead of the LED microscope and X-ray, the challenge still existed. Ruvuma region introduced the 6QS-CTTRFM MODAL to reduce the existing challenge. This modal is based on the Quality Sample Collections, Transportation, Testing, results interpretation, results Feedback, and Monitoring and evaluation of the results. The modal helped the TB health workers including Community Health Workers,RHMTs, and IPS to have close monitoring and evaluation of the of the TB diagnosis and their results. Also, 6QS-CTTRFM MODAL will be used by the Ministry and other stakeholders in other regions of Tanzania to tackle the problem of the low bacteriological confirmation of TB cases in Tanzania

3.0. RESEARCH METHODOLOGY

3.1. Implementation area

The innovative strategies were conducted in Ruvuma regions found in the southern part of Tanzania with 8 councils namely Madaba DC, Mbinga DC, Mbinga TC, Namtumbo DC, Nyasa DC, Songea DC, Songea MC, Tunduru DC. The region consists of 412 health facilities including 18 hospitals 43 health centres and 331 dispensaries whereby 73 are TB diagnostic centres. For TB diagnosis the region consists of 9 GeneXpert, 2 TrueNat, 15 X-ray machines, and 73 LED microscopes in selected facilities

3.2. Implementation strategy

In 2020, the region began to make a joint effort between the RHMT and Ips (MDH and USAID Afya Yangu) after discovering that most of the facilities preferred to use X-rays for TB diagnosis rather than Molecular diagnostic machines (GeneXpert and TrueNat). RHMT and IPs developed a strategy known as the ***6Qs-CTTRFM modal*** which stands for ***Quality Sample Collections, Quality Sample Transportation, Quality Sample Testing, Quality Sample Results and Quality Results Feedback and Quality Monitoring and Evaluation of the results***. The modal was started with provision of training of the DOT nurse and CHWs on quality sample collection and storage, training of riders (Boda-boda) for quality sample transportation, training of laboratory staffs for quality sample testing that includes the use of Molecular diagnostic testing as the first tool for testing and adherence to the recommended algorithm, training of the TB clinicians, DOT nurses and Laboratory staffs that selected as a focal person for quality assurance of the results and provision of the feedback to the respective TB diagnostic centers and conducting training of the RHMTs, CHTMTs, and Health managements on monitoring and evaluation of the trends of the bacteriological confirmation in their area through weekly and quarterly meetings. After training the implementation of the 6Qs-CTTRFM modal was started in the TB diagnostic center with an emphasis on sample transportation and the use of the Molecular diagnostic machine as the first tool for bacteriological confirmation rather than the use of the X-ray and microscope.

IPS, RHMTs, and CHMTs were responsible for close supervision and support for the preparation of the quarterly meetings at the Council level where each facility reports its trends on TB bacteriological confirmation challenges faced and solutions, and at the regional level where the council reports the TB bacteriological confirmation trends, challenges faced and solution.

3.1 Population and Sample

The implementation of the modal use of the Sputum Samples taken from the TB presumptive attending to the OPD and other clinics or during the active case findings outreach program and Community referrals. A total of 35183 samples were collected from 2020 to 2023

3.2 Data and Sources of Data

The data of the TB presumptive were collected through the TB presumptive Register (TB16) and for TB patients were obtained from the TB register(TB03). The data of the collected samples and their results were obtained from the TB laboratory registers (TB05)

4.0. RESULTS

4.1. Trend of the bacteriological confirmed TB at TB diagnostic Centers in Districts councils of Ruvuma region

After the initiation of the 6Qs-CTTRFM modal there, the regional trends of notification of TB cases and the bacteriological confirmed TB cases increased yearly. In starting the implementation of the 6Qs-CTTRFM modal in 2020 the sample collected were from 2065 2020 to 2394 in 2023. The increase in the number of samples collected resulted in an increase in the bacteriological confirmed cases from 491 in 2020 to 985 in 2023. See the table below

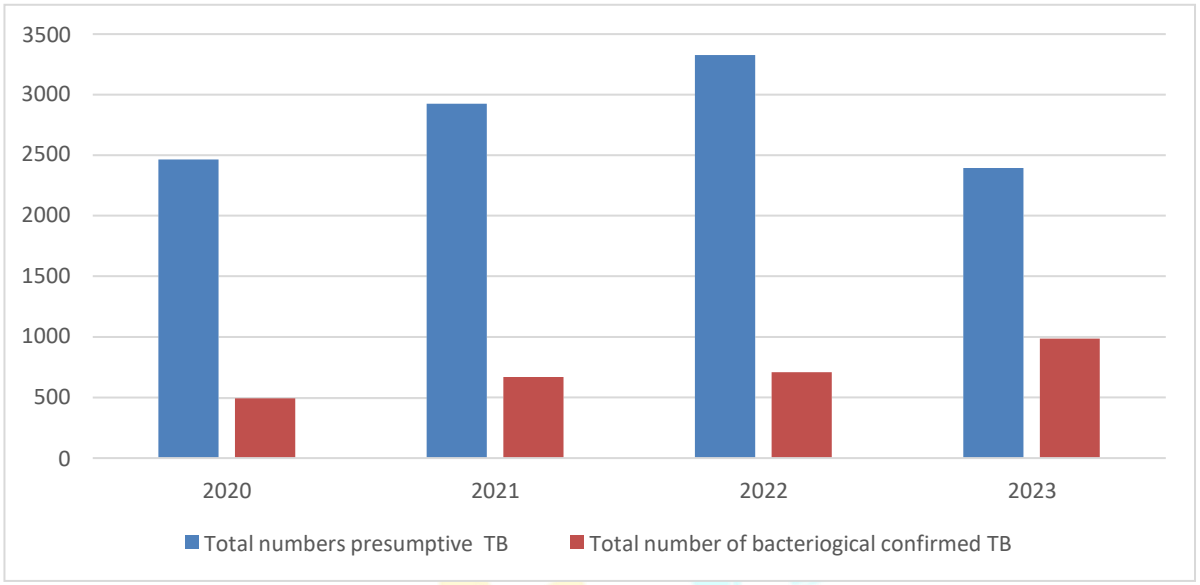

Figure 1: Regional trends of Bacteriologically Confirmed TB cases from 2020 to 2023

When stratified with the council the results show an increase in the sample collected and transported similar to the increase of the TB bacteriological confirmation among the TB diagnostic centers of each council. Mbinga District Hospital (DH) TB diagnostic centers increased its bacteriological confirmed cases from 98 in 2020 to 198 in 2023. This was followed by the Songea MC at the Songea Regional Referral Hospital(RHH) which increased its bacteriological confirmed cases from 0 in 2020 to 114 in 2023 and Ruhuwiko dispensary which increased its bacteriological confirmed cases from 0 to 116. from 2020 to 2023. The ow progress of the bacteriologically confirmed cases was shown to Madaba Health Centre which increased its TB bacteriological Confirmed cases from 0 in 2020 to 27 in 2023. See the table below:

Table 1: Ruvuma Region District Councils Trends of Bacteriologically Confirmed TB cases at TB diagnostic Centre facilities from 2020 to 2023

I.

District Council	Health facility	2020		2021		2022		2023	
		Sample tested	positive	Sample tested	positive	Sample tested	positive	Sample tested	positive
Madaba	Madaba HC	0	0	51	1	591	25	528	27
Mbinga DC	Litembo Hosp	712	19	818	36	908	47	1931	35
Mbinga TC	Mbinga DH	1425	98	1445	142	1222	148	1596	198
Namtumbo	Namtumbo DH	1472	17	807	9	1125	18	916	111
Nyasa DC	Nyasa DH	190	5	296	28	558	22	806	50
Songea DC	Peramiho Hosp	1050	64	894	65	550	32	969	63
Songea MC	Songea RRH	3129	132	1813	82	1456	89	1306	114
Songea MC	Ruhuwiko Disp	0	0	664	54	605	29	702	116
Tunduru	Tunduru DH	1572	79	963	55	680	43	1433	108
Total	**Ruvuma**	**9550**	**414**	**7751**	**472**	**7695**	**453**	**10187**	**822**

5.0. DISCUSSION

6Qs-CTTRFM model has impacts on increasing the bacteriologically confirmed cases in the Ruvuma region. The IPs RHMTs and CHMTs play key roles in the monitoring and evaluation of the implementation of the 6Qs-CTTRFM modal through close monitoring and evaluation of the whole process involved in the 6Qs-CTTRFM modal. Refresher training of the health care providers including CHWs and Sample carriers is important for maintaining the quality of the sample and testing.

6.0. CONCLUSION AND RECOMMENDATION

6Qs-CTTRFM model plays a key role in increasing the bacteriological confirmed cases in Ruvuma. The engagement of the IPs, RHMT, and CHMTs in maintaining the 6Qs-CTTRFM modal is important for maintaining the implementation of the modal. We recommend the modal should be emphasized in other areas in Tanzania to reduce the challenge of the low bacteriological confirmation of TB Cases

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